

ARAPAHOE NWR DIVERSION RECONSTRUCTION AS-BUILTS

DIVERSION RECONSTRUCTION FOR:

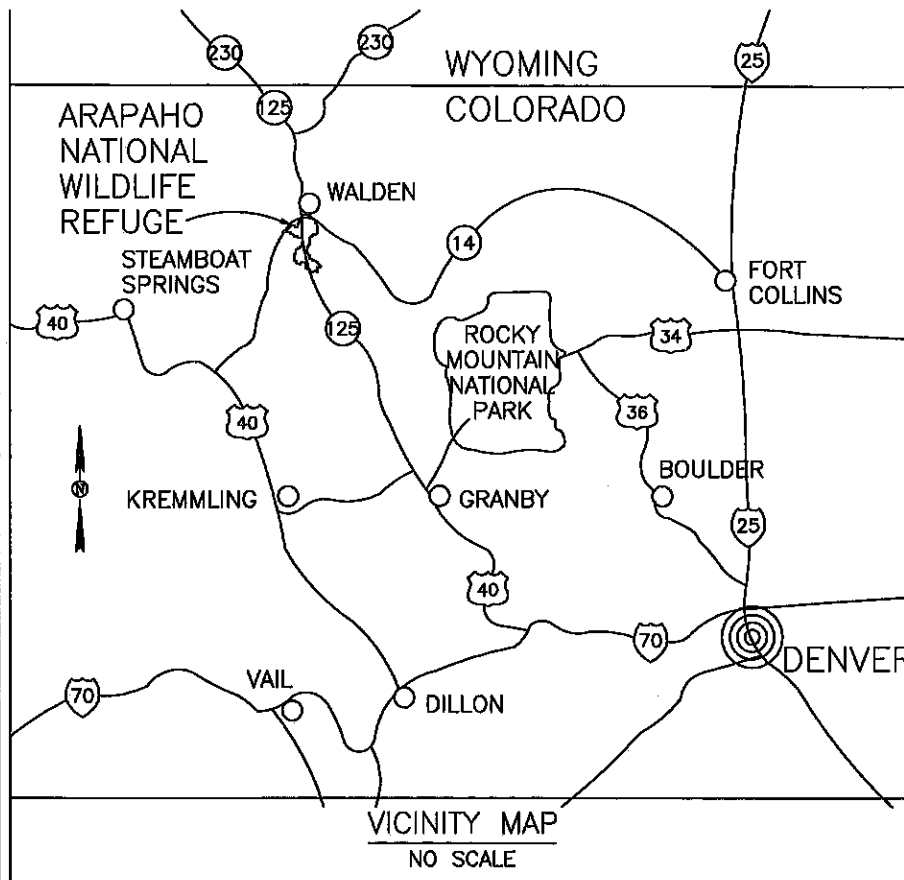
**HUBBARD #2
OKLAHOMA #1
HILL & CROWDER
DRYER**

PREPARED BY:

NOTES:

All work shall conform to Construction Specifications 32, Concrete.
In addition, the following is required:

1. The concrete shall have a 28 day compressive strength of 4000 psi and contain a minimum of 6 sacks of Type II (or equal) cement per cubic yard with a 5%-8% air entraining and slump between 3"-5".
2. Reinforcing bar spacing is center to center of bars. Double mat reinforcing bars shall have a bar cover clear distance between the surface of the bars and the surface of the concrete of 2 inches for formed and top surfaces and 3 inches for surfaces placed against earth.
3. Reinforcing bars shall be continuous from floors, walls, and footers into adjacent walls, floors, and/or footers.
4. Snap cone ties (3/4") shall be used for forming. All forms shall be removed prior to placing backfill.
5. All exposed edges shall be chamfered 3/4". All concrete shall be finished straight, smooth, clean, and neat.
6. All concrete shall be consolidated with a concrete mechanical vibrator.
7. All backfill material shall be minus 3" sands and gravels obtained from river excavations compacted in 12" lifts with a hand directed vibrating plate compactor.
8. The rock for riprap and for the weir structure shall be sound and angular with a minimum density of 2.5. The maximum dimension of the rock shall be no more than 2.5 times its least dimension. The rock shall be well graded and range in size from 6" min diameter to 24" max diameter. At least 60% of the rock shall be larger than 15" diameter.
9. The concrete shall be housed or blanketed and at no time shall the temperature of the concrete get below 40 degrees F.



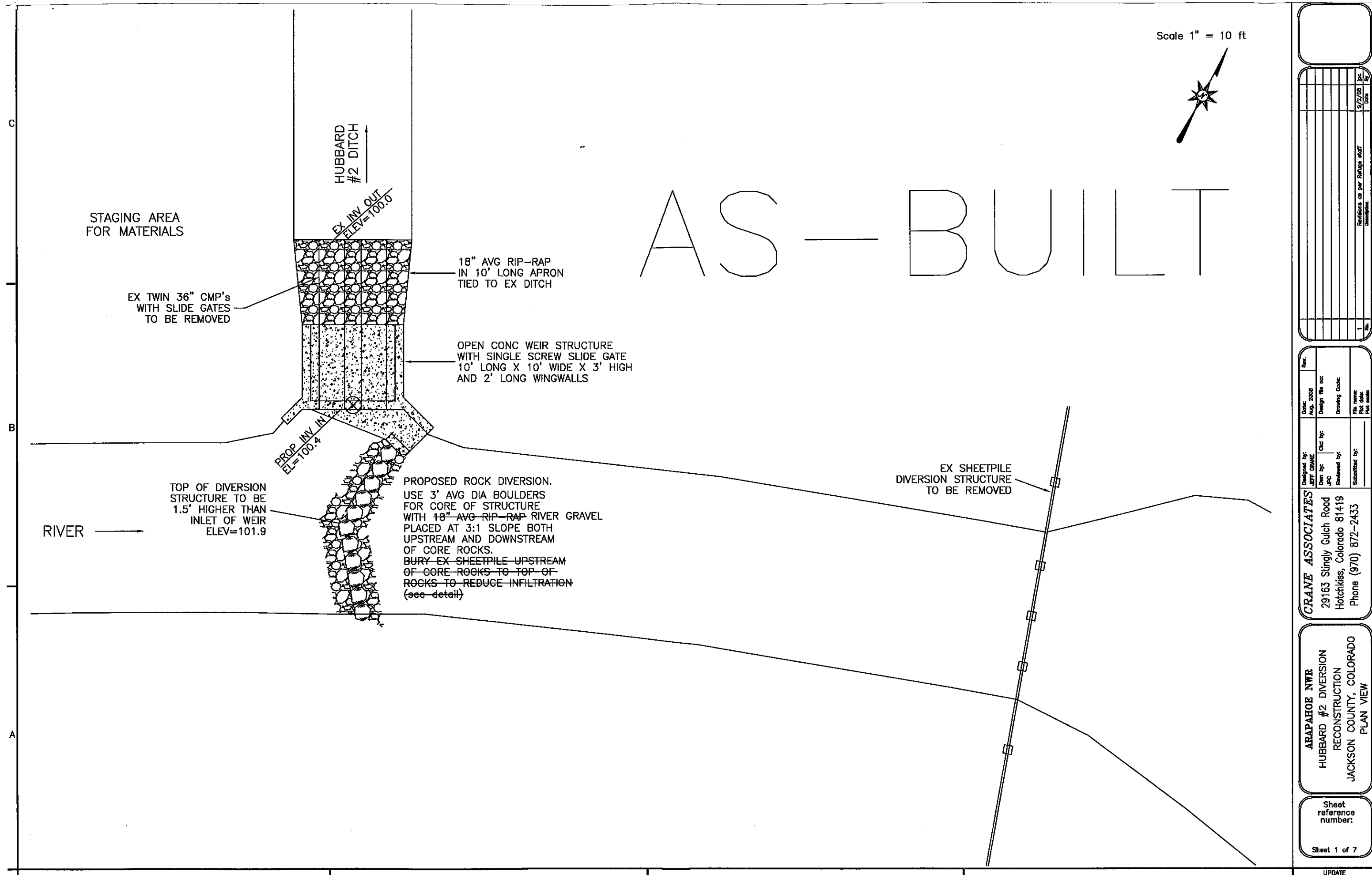
INDEX OF DRAWINGS:

1. HUBBARD #2 PLAN VIEW - HEADQUARTERS
2. OKLAHOMA #1 PLAN VIEW - NO WATER (@ SOUTH END OF RIVER)
3. HILL & CROWDER PLAN VIEW
4. DRYER PLAN VIEW
5. WEIR STRUCTURE DETAILS
6. WEIR STRUCTURE DETAILS
7. DIVERSION STRUCTURE DETAILS

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29163 STINGLEY GULCH ROAD
HOTCHKISS, CO 81419
(970) 872-2433

NOVEMBER
SEPTEMBER 2008



STAGING AREA
FOR MATERIALS

EX TWIN 36" CMP's
WITH SLIDE GATES
TO BE REMOVED

HUBBARD
#2 DITCH

EX INV OUT
ELEV=100.0

18" AVG RIP-RAP
IN 10' LONG APRON
TIED TO EX DITCH

OPEN CONC WEIR STRUCTURE
WITH SINGLE SCREW SLIDE GATE
10' LONG X 10' WIDE X 3' HIGH
AND 2' LONG WINGWALLS

PROP INV IN
EL=100.4

RIVER →

TOP OF DIVERSION
STRUCTURE TO BE
1.5' HIGHER THAN
INLET OF WEIR
ELEV=101.9

PROPOSED ROCK DIVERSION.
USE 3' AVG DIA BOULDERS
FOR CORE OF STRUCTURE
WITH 18" AVG RIP-RAP RIVER GRAVEL
PLACED AT 3:1 SLOPE BOTH
UPSTREAM AND DOWNSTREAM
OF CORE ROCKS.
BURY EX SHEETPILE UPSTREAM
OF CORE ROCKS TO TOP OF
ROCKS TO REDUCE INFILTRATION
(see detail)

EX SHEETPILE
DIVERSION STRUCTURE
TO BE REMOVED

AS-BUILT

Scale 1" = 10 ft



CRANE ASSOCIATES		29163 Stingy Gulch Road Hotchkiss, Colorado 81419 Phone (970) 872-2433	
DESIGNED BY JEFF CRANE	DATE AUG. 2005	DESIGNED BY JPC	DATE 9/2/05
CHKD BY JPC	CHKD BY JPC	CHKD BY JPC	CHKD BY JPC
SUBMITTED BY		SUBMITTED BY	
REVIEWED BY		REVIEWED BY	
APPROVED BY		APPROVED BY	
ARAPAHOE NWR HUBBARD #2 DIVERSION RECONSTRUCTION JACKSON COUNTY, COLORADO PLAN VIEW			
Sheet reference number: Sheet 1 of 7			
UPDATE			

Scale 1" = 10 ft



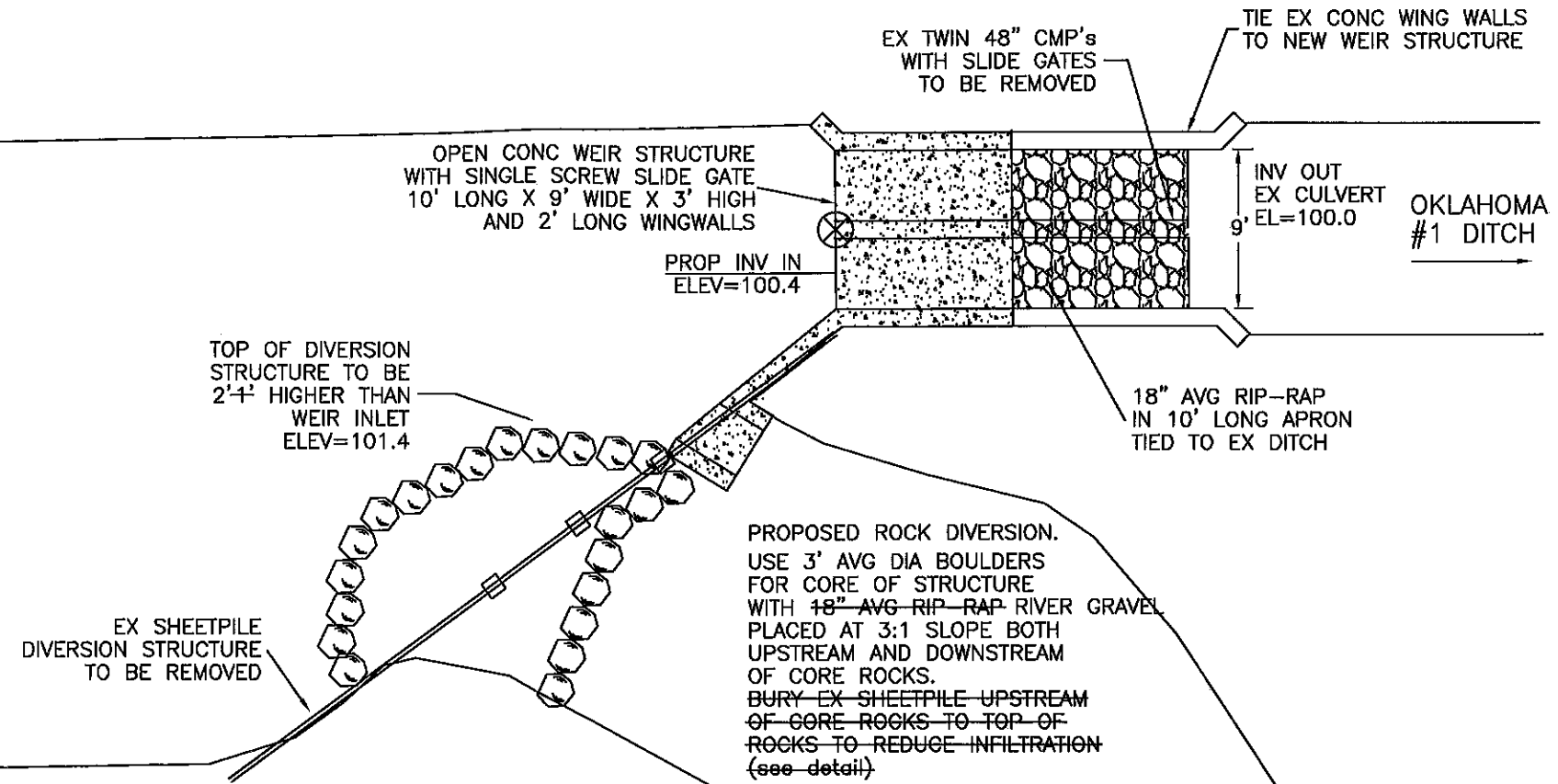
C

B

A

ILLINOIS RIVER

AS-BUILT



Rev.	Date	Description
1	9/2/08	Revisions as per Refugio staff

Rev.	Date	Description
1	9/2/08	Revisions as per Refugio staff

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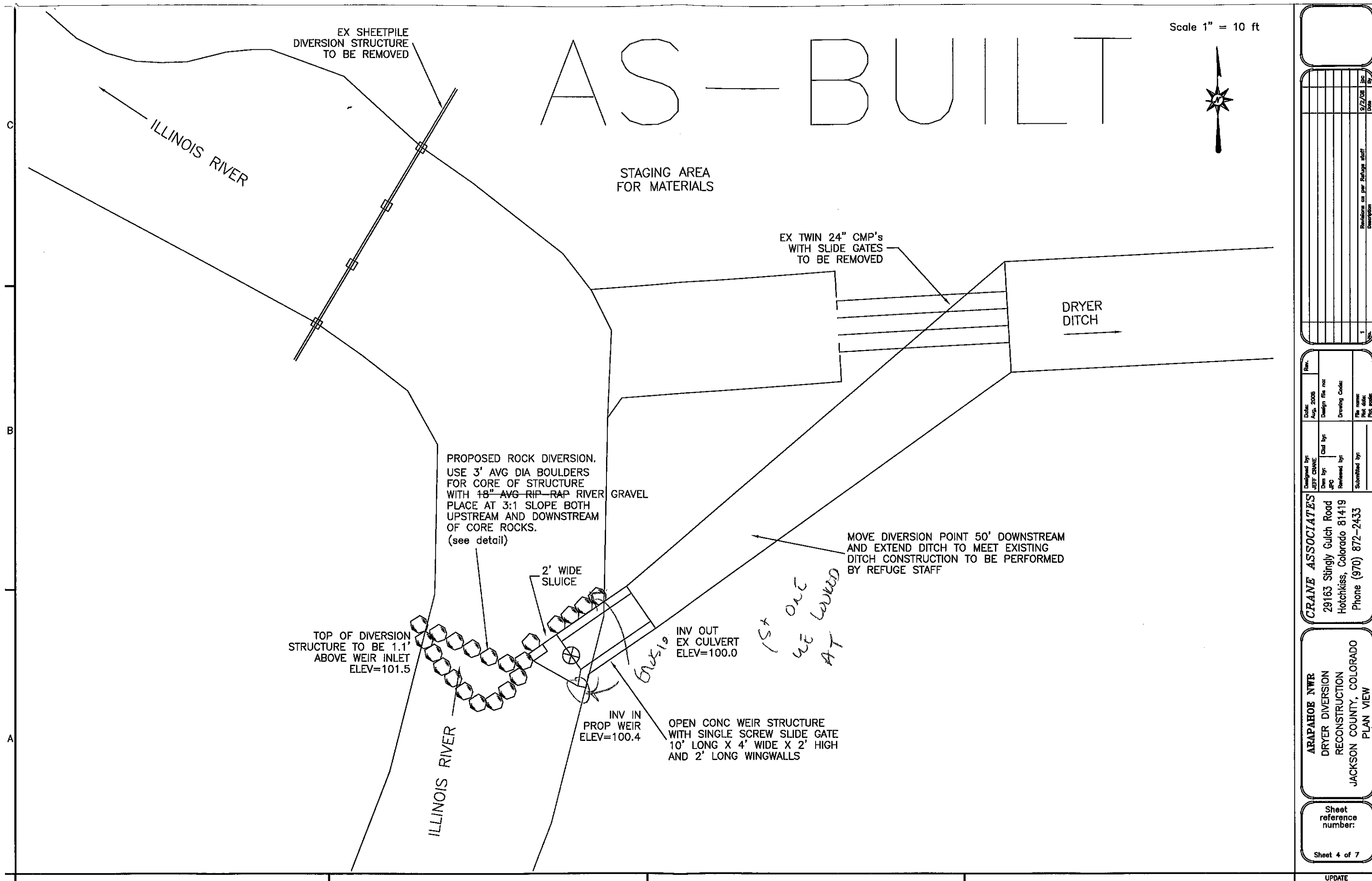
ARAPAHOE NWR
OKLAHOMA #1 DIVERSION
RECONSTRUCTION
JACKSON COUNTY, COLORADO
PLAN VIEW

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AS-BUILT

Scale 1" = 10 ft



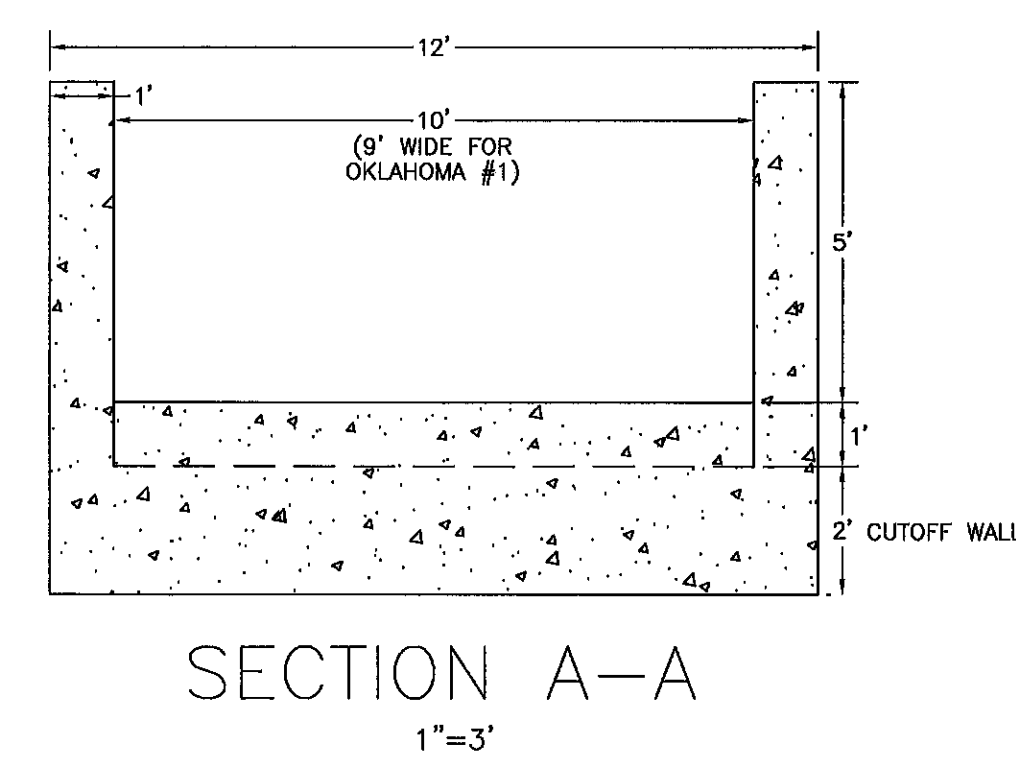
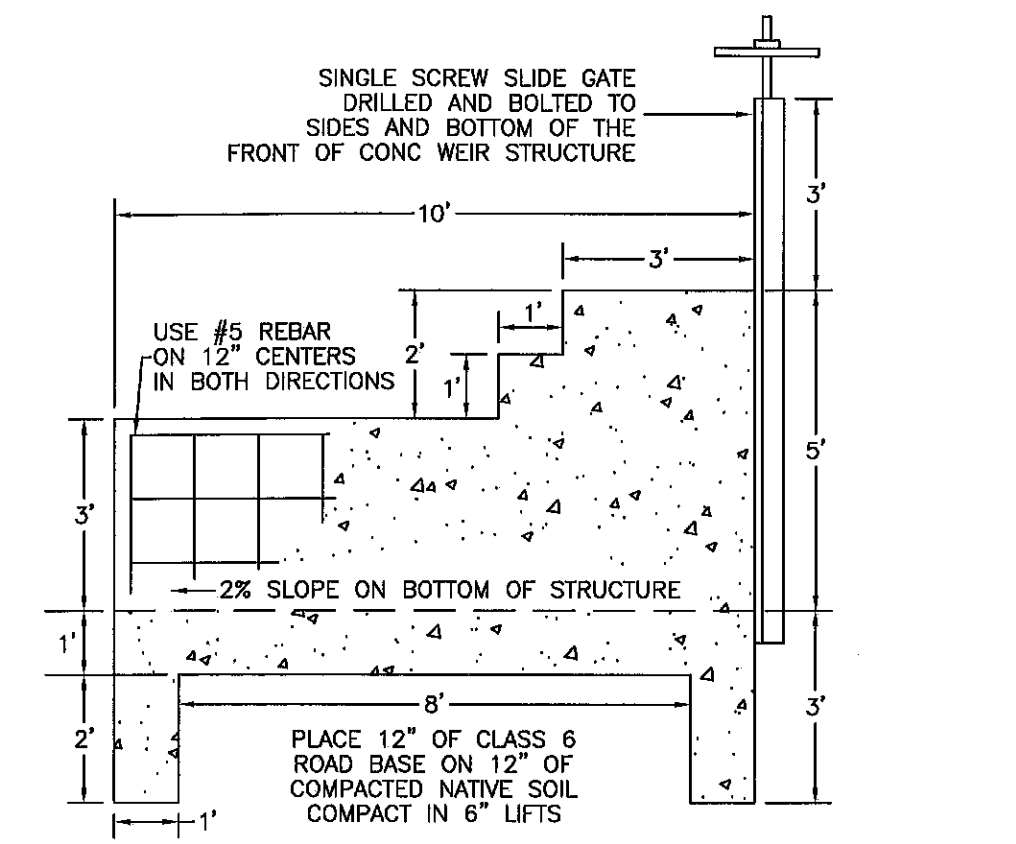
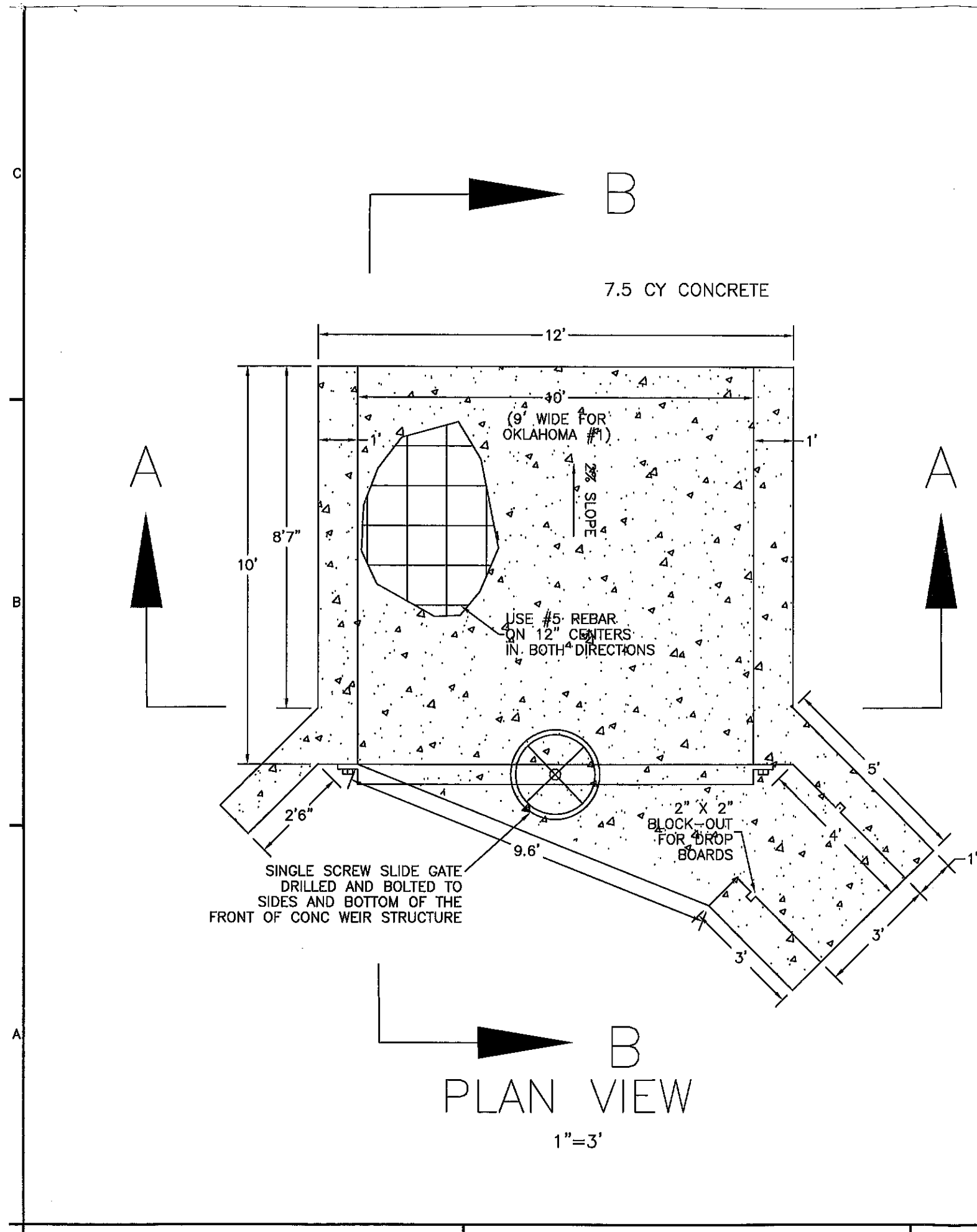
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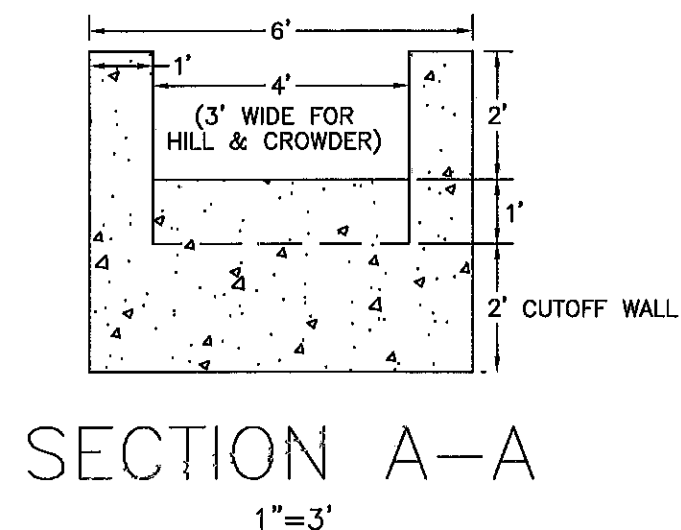
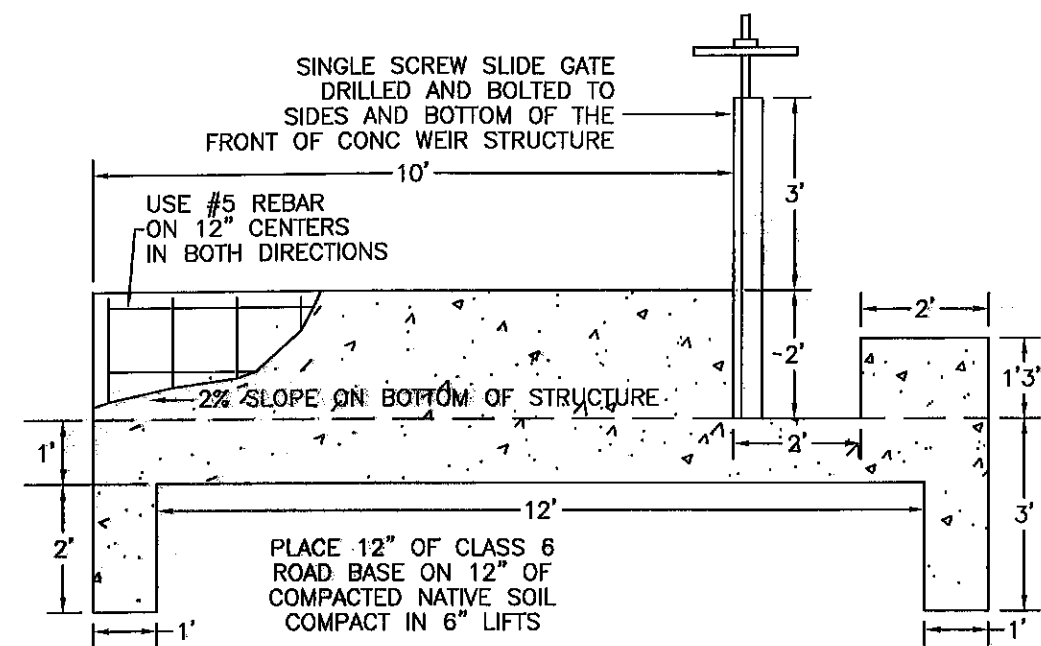
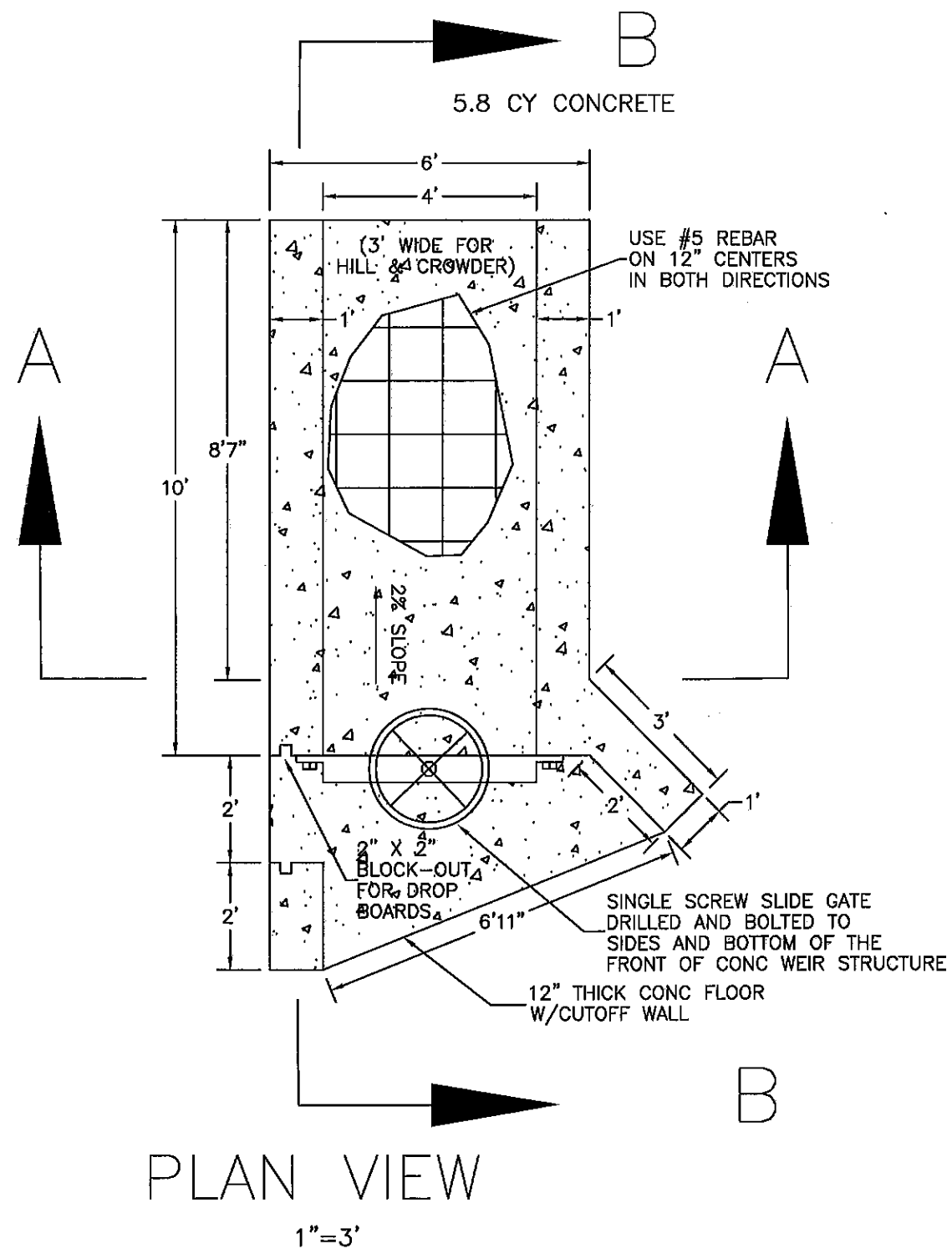
ARAPAHOE NWR
DRYER DIVERSION
RECONSTRUCTION
JACKSON COUNTY, COLORADO
PLAN VIEW

Sheet reference number:
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UPDATE



CRANE ASSOCIATES 29163 Stingy Gulch Road Hotchkiss, Colorado 81419 Phone (970) 872-2433		DESIGNED BY: JCF/CRANE CHECKED BY: JCF DATE: 10/2007	DRAWING CODE: JCF DATE: 10/2007	FILE NAME: JCF PLOT DATE: 10/2007
ARAPAHOE NWR HUBBARD #2 & OKLAHOMA #1 DIVERSION RECONSTRUCTION JACKSON COUNTY, COLORADO WEIR STRUCTURES		SHEET reference number: Sheet 5 of 7		

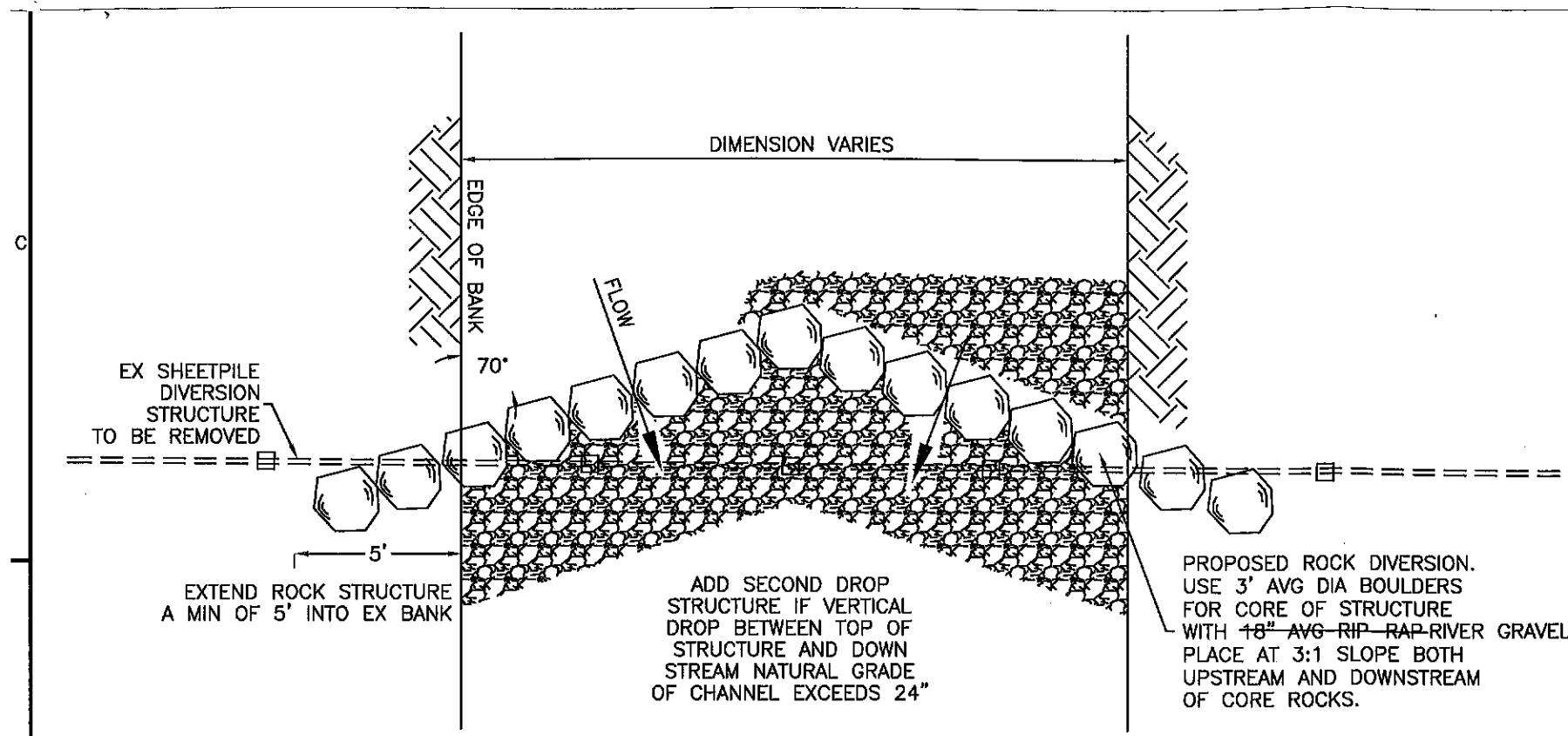


Rev.	Date	Design	Drawn	Checked	Reviewed	Submitted	Per	App	Date
1	9/2/08	Design	JPC	JPC	JPC	JPC	JPC	JPC	9/2/08
Revisions as per Refugio Staff Description									

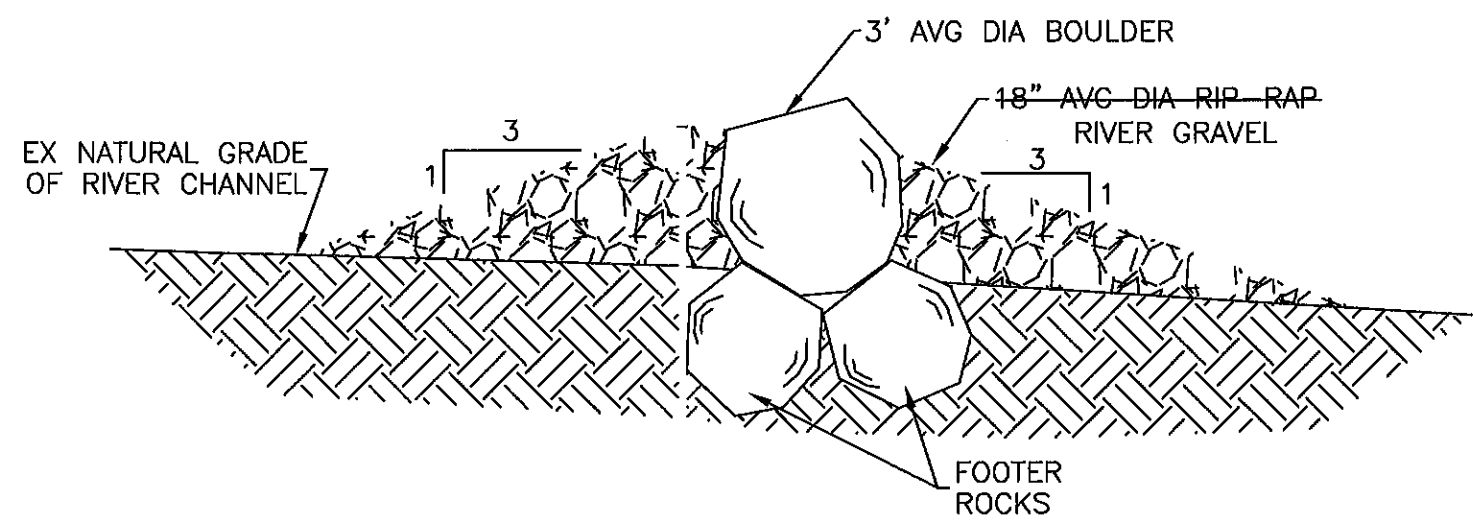
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ARAPAHOE NWR	DRYER / HILL & CROWDER	DIVERSION RECONSTRUCTION	JACKSON COUNTY, COLORADO	WEIR STRUCTURES
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DIVERSION STRUCTURE DETAIL
PLAN VIEW
NTS



DIVERSION STRUCTURE DETAIL
CROSS SECTION
NTS

<div>CRANE ASSOCIATES</div> <div>29163 Stingly Gulch Road</div> <div>Hotchkiss, Colorado 81419</div> <div>Phone (970) 872-2433</div>		<div>Designed by:</div> <div>JEFF CRANE</div> <div>Drawn by:</div> <div>JPC</div> <div>Reviewed by:</div> <div></div> <div>Submitted by:</div> <div></div>	<div>Date:</div> <div>Oct. 2007</div> <div>Design file no:</div> <div></div> <div>Drawing Code:</div> <div></div> <div>File name:</div> <div></div> <div>File date:</div> <div></div> <div>File code:</div> <div></div>	<div>Rev.</div> <div></div> <div>By</div> <div></div> <div>Date</div> <div></div>
<div>ARAPAHOE NWR</div> <div>DIVERSION STRUCTURE</div> <div>RECONSTRUCTION DETAILS</div> <div>JACKSON COUNTY, COLORADO</div> <div>ALL STRUCTURES</div>		<div>Revisions as per Range staff</div> <div>1</div> <div></div> <div>9/2/08</div>		
<div>Sheet reference number:</div> <div>Sheet 7 of 7</div>		<div>UPDATE</div>		